



# Dietary Pattern and Its Relation to Health and Nutritional Status of Asthma Patients

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**ABSTRACT** : Allergic bronchial asthma is caused by exposure to environmental and dietary allergens. Approximately in every fifth asthmatic patient the possible role of food allergy should be taken into account. The present study consisted of 128 subjects of 40-90 years of age group attending breath easy chest care centre, assighat Varanasi. The data was collected with the help of structured questionnaires on general information e.g. age, sex socio-economic status and occupation and for specific information e.g. history of the illness, food allergy, symptoms, and their nutritional pattern. Anthropometric assessment for height, weight and BMI, laboratory tests and clinical parameters e.g. hemoglobin, TLC, DLC and pulmonary function tests were collected within the duration of two months. In the statistical analysis, percentage, mean and Chi-square test were calculated. Total 83 per cent male and 45 per cent female respondents participated in the present study. 26.5 per cent males and 14.06 per cent females in the study population were suffering from severe asthma. Dust (41.40%) was the most common allergen occurred with highest percentage in asthmatics patients and second most allergen which occurs in patients are foods with the percentage of 27.34 per cent. Through food frequency questionnaire it was found that fat intake was mostly consumed by the males (43.75%) and females (27.34%) respondents. Due to lack of fruits and vegetables in their diet patients were probably suffering from Vitamin C deficiency.

## KEY WORDS :

Asthma, Health,  
Nutrition, Asthmatic  
patients, Pulmonary  
function test

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Asthma is a serious public health problem throughout the world, affecting people of all ages. It is a pulmonary disease characterized by reversible airway obstruction, airway inflammation and increased airway responsiveness to a variety of stimuli. This results in recurrent attacks of dyspnoea, cough and expectoration of tenacious mucoid sputum. Asthma can trigger off due to various factors so it is important to take control of these factors that may influence a

person adversely resulting in the manifestation of the symptoms. A very important risk factor for development of asthma is atopy. Atopy is a tendency to produce excessive amounts of IgE antibodies when exposed to allergens. Allergic Bronchial Asthma is caused by exposure to environmental and dietary allergens. Diet is very important in controlling and even correcting certain symptoms. The associations between fruits (rich in antioxidants) and asthma may indicate a

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protective effect of flavonoids (Shaheen *et al.*, 2001). The specific foods we eat might have a direct impact on asthma. Significant results include positive effects on pulmonary function tests, bronchoprovocation challenges with methacholine or histamine or allergens, improvement in white blood cell function and motility, and a decrease in respiratory infections (Bielory and Gandhi, 1994). However research needs to be done to understand the exact connection between asthma and diet.

## OBJECTIVES :

The objective of the study was to assess the nutritional and dietary pattern of asthma patients and to explore the relationship between food items and asthma which leads to allergy.

## RESEARCH METHODOLOGY

Breathe easy chest centre and hospital, assighat, Varanasi was selected for the collection of data. Samples (n= 128, 83 male and 45 female) were collected through random and purposive sampling method. Anthropometric measurement (height, weight, BMI using quetlet index, grading of obesity), bio-chemical and clinical parameters (Haemoglobin, TLC, DLC and pulmonary function test) and dietary and nutritional assessment (Diet history, food frequency table) were conducted followed by descriptive statistical analysis and chi square test.

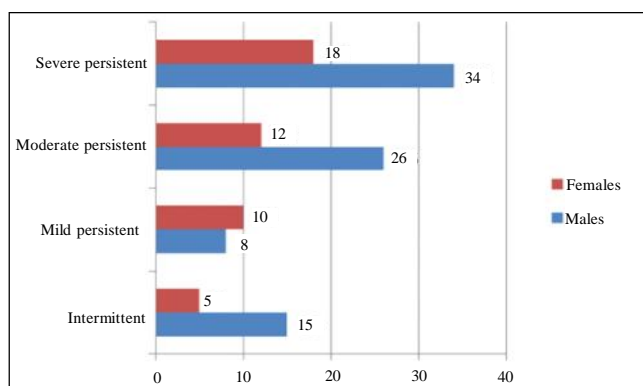
## RESULTS AND DISCUSSION

The information regarding their family history, smoking, severity of asthma, pulmonary function test and their dietary consumption through food frequency were also recorded. The percentage of women was higher (35%) than men (21%) having family history of asthma. 56 per cent males were past smokers before they get exposed from asthma while percentage of women past smoker was only 2 per cent. It was also observed that 5 per cent males were current smoker while no women were found

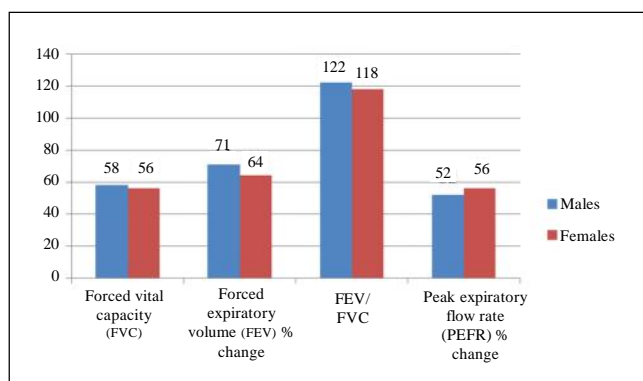
to be current smoker in the study. The number of respondents with the level of severity of asthma and pulmonary function test were categorized under the following Tables 1,2 and 3 and Fig. 1 and 2, respectively.

**Table 1 : Level of severity of asthma**

Severity of asthma	Males	Females
Intermittent	15(11.7%)	5 (3%)
Mild persistent	8 (11.7%)	10 (7.81%)
Moderate persistent	26(20.3%)	12 (9.3%)
Severe persistent	34(26.5%)	18(14.06%)



**Fig. 1 : Level of severity of asthma**



**Fig. 2 : Pulmonary function test**

**Table 2 : Pulmonary function test of the respondents**

Spirometry	Male	Female	Chi- square test
Forced vital capacity (FVC)	58	56	0.113
Forced expiratory volume (FEV) % change	71	64	
FEV/FVC	122	118	
Peak expiratory flow rate (PEFR) % change	52	56	

Then, assessment of dietary consumption by food frequency table of respondents was done. Consumption of staple cereals and pulses were satisfactory among men and women but the opposite was obtained in the case of milk consumption. There were 23 per cent men having milk less than 3 times a week. 29 per cent men and 21.87 per cent women were having fruit less than 3 times a week. The number and the percentage of respondents according to their daily consumption for different food groups are as follows:

### Conclusion :

26.5 per cent males and 14.06 per cent females in the study population were suffering from severe asthma. Dust (41.40%) was the most common allergen occurred with highest percentage and second most

allergen which occurs in patients is foods with the percentage of 27.34 per cent. Through food frequency questionnaire it was found that fat intake was mostly consumed by the males (43.75%) and females (27.34%) respondents. Due to lack of fruits and vegetables in their diet patients were probably suffering from vitamin C deficiency. The consumption of fruit rich in vitamin C, even at a low level of intake, may reduce wheezing symptoms in childhood, especially among already susceptible individuals (Forastiere *et al.*, 2000). 23 per cent men were taking milk less than 3 times a week while only 5 per cent of women were of the same frequency. It means women were consuming milk more than men of the study population. Woods *et al.* (2003) in his study observed negative associations between milk and milk product and

Sr. No.	Food groups	Frequency	Gender	
			Males	Females
1.	Cereals	Less than 3 times a week	3(2.34%)	2(1.56%)
		3 times a week	7(5.46%)	5(3.9%)
		More than 3 times a week	73(57.03%)	38(29.68%)
2.	Pulses	Less than 3 times a week	8(6.25%)	5(3.9%)
		3 times a week	12(9.37%)	6(4.68%)
		More than 3 times a week	63(49.2%)	34(26.56%)
3.	Green leafy vegetables	Less than 3 times a week	12(9.37%)	5(3.9%)
		3 times a week	28(21.89%)	9(7.03%)
		More than 3 times a week	43(33.59%)	31(24.21%)
4.	Root and tubers	Less than 3 times a week	12(9.37%)	5(3.9%)
		3 times a week	21(16.4%)	12(9.37%)
		More than 3 times a week	50(39.06%)	28(21.87%)
5.	Fruits	Less than 3 times a week	38(29.68%)	28(21.87%)
		3 times a week	20(15.62%)	10(7.81%)
		More than 3 times a week	25(19.53%)	7(05.46%)
6.	Milk	Less than 3 times a week	30(23.43%)	5(3.9%)
		3 times a week	25(19.53%)	14(10.93%)
		More than 3 times a week	28(21.87%)	26(20.31%)
7.	Fats and oils	Less than 3 times a week	12(9.37%)	5(3.9%)
		3 times a week	15(11.71%)	5(3.9%)
		More than 3 times a week	56(43.75%)	35(27.34%)
8.	Sugar/ Jaggery	Less than 3 times a week	27(21.09%)	9(7.03%)
		3 times a week	18(14.06%)	12(9.37%)
		More than 3 times a week	38(29.68%)	24(18.75%)

asthma while the consumption of soy beverage; ricotta cheese and low-fat cheese were positively associated with asthma (Woods *et al.*, 2003).

#### Recommendation :

It was recommended to asthma patients to avoid fried and spicy food and heavy meals. Asthma patients were advised to concentrate more on eating vegetarian diets rather than non-vegetarian diets. The calorie, protein and carbohydrate requirement of asthmatics is higher but fat intake should be less than that of recommended dietary allowances (RDA).

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